Name	Σ.c.ιεωίς k Numbei	. 195	-120	7	*
	henriting of Bu			-	<u>75 126</u> 973
Dates Fi	om				

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12900 Snow Road
Parma Ohio 44130

	· · · · · · · · · · · · · · · · · · ·
30 VI of 195-128-91#7 wl 195-128-68 (45.0 wto A1C), 640 in Aqueau Sola)	(Cot. A/Ch. 6/60) 01+02
1 195-128-43#8 w/195-128-95 (" " " " " " " " " " " " " " " " " " "	[4 h - 1 03 te7
Buran Analyses for 195-147-45 (core & GP-5432 resin) + ICP-AES of 145-128.	60 lanes 61 0310061 . S
TEADULA - 10 claim to 900° of AR Resin MP. H, Lot 97058	(FOAM) 6+T
Tg (DSC) Data - 20 clmin et " n n n n	(") 8-13
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Hest Treat . 400°C, 12 Ws, N2 + Annex 1 - 400°C, 30 mm of Fol-000 71.	(VFT) 81
" " - " " - " - " fol-00072	
11 17 / 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
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VI of 195-129-86 "3-1-A w/s:1:con (IV) Dx. de calloidal dispersion	Leictemp BF / 180 -01
Drying of ~10g samples of Siliton (10) Oride, 30% in HyD, celloidal, disp	ners of (Cle Contert) Ty-71
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22 VI of 195-129-95#3-2-A ulsilian (II) oxide, colloide I dispersion)	(c/c fom! 86) 99-100
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(cleamp BP)

Purpose

To obtain initial we and dimensions prior to vaccine impregnation we a "T-143 TYPE" resin

Mat 1:

cle composite via BP Process # 4-1: Reviel From P. S. rocky 4/30/01. From 12 Luwrenceburg Trial. Block 4-1 + 1.5 x 3.0 x 7.0 inches. From 4th block in the series. Made w/ 0.25 long pitch fibers and Reilleg 155 p. total, Lood Rates 85/15 + 5 wt/s sulfur bused on the pitch weight.

Procedure:

Ultrateric worked in descrited 1/2 0 3x, Smin intervals = Vaccount dried ownight at ~ 150°C to 2.4mm pressure.

Unloaded a cooled in descriptor. 5/8/01. Weight of climensians of sluter = loaded into view at ~ 150°C, 5.0 scrit organ purged ontil loaded into VI unit.

Weigh & Dimusion! (5/11/01)

ω+ <sub>t</sub> (5)	۷,	<b>د</b> ک	L3	ANE LEN.	w;	ردنا د	wz	HVE	Η,	H <sub>2</sub>	H <sub>3</sub>	AVE Ht.	748 38:
1138,84	191.91	132.27	147,62	192.07	B3.78	83.36	82.32	83.15	47.21	46.31	46.65	46.86	748.36

=> Pensity at = 1,522 g/cc

Comments.

area appears to contain from oxide.

VI and Com: Ret. 195-124-1455 55056

Performed and Recorded by:

Read and Understood by:

Date / /

Date 1

# Subject preparation . F @ 900 on Alignoto af 50/50 by Volume GP-5432/Fortwal (c/campar) 53 Cross-Reference (if any) Purpose: To impregnate 195-129-52 wha "T-143 Type" restr. Materals: GP-5432: Lot # 19588. Recid Fram Georgia-Pacific 9/28/96. LIMS # A96-03635. Stored in Freezer. Aux. Med MCC (2) = 48.6 (0=0.37, n=3), BrKFLQ V.SCO) = 157,3 of at 71.0 F, POSC Data: R.F. 195-105-49, TGA Yield (9002) = 47.5% Current Vizc= 283,5cf. at 68.7 F Fureral! Reagent Grade (Fisher). Record 1/15/01. 21 Aliquot used 60, ml of @ 500, ml recvid 5/15/01 => Balance = 940ml. Preparation 1st Aliquot: (5/14/01) - 12 Erleiniger Flast, 450ml 68.5432 +450ml Futural FLASK(etc) + FLAFORALCE = 1516.0 FLASK (ets) + GP-54020) = 996.3 FLASICIETO LA = 996-3 FLASK lett) US = 955.9 540.4g 450ml Neporter = 519.7g \$ 50.98/1. 68-5432 by wt 450ml GP-5432 CEI " Commets! may stirred who external heat for 15 min after combining = Transfer to oz qlass jar. Brookfield (LVT) AT Viscosity !

characterization of the 15th Aliquoti (5/15/01)

Spec. I. · Gravity at RT:

Preparation of and Aliquot: (5/15/01) - IL Erleneyer Flask. 450 ml GP5432, 450 ml Futural

solutions combined 5/16/01. Gabil as 195-129-53 12 Use: R.S. 195129-55

7. Mod MCC of Aliquot #1: Ref. 190=129-54

Performed and Recorded by	1.
Directed by:	
Read and Understood by:	

Date Date Date

## Subject , mod MCC of 195-129. 53 1st Aliquet Cross-Reference (if any)

Material:

195-129-50, 12th A).quet: 50/50 by volume, 51.0/49.0 by weight 68-5432/Fur
Prep. 5/14/01, Viscosi: 18.7. Prat 21.8 F, Scari: 1.190 at 71

1. mod MCC Determinations: (5/15/01) - NI. Sq sample size. Cored IN at 144 &, 5.0 SCFHI

1) CRUC+CHIPS+SAMPLE (3) = 19.1507

EAVELCHIPS+ SAMPLE (144) = 18.399 77 => Yield (144) = 50.5:

eruc+ chips wi = 17.630 B

CAUCHCHIPS + SAMPLE (MICE) = 18. 150 2 = 7 Yield (MICE) = 67.5:

SAMPLE LES = 1.51994

TOTAL YIGLD = (0.5059×0.6755)×100 = 34.17%

NERWELCHIPS + SAMPLE WIL = 18.9635

CANCHCHIPS + SAMAE(144) = 18.20009 AY: elicury) 49.20

CANCTOHIPS its - 17.4606

eruc+CHIPS+SAMPLE (MCCS = 17.9770g =) Xield(MCCS= 67.84)

SAMPLE (5) = 1.50299

· TOTAL YIECD= (0,4920×0.6984) × 100 = 34.36 %

31 ENCYCHOPS + SAMPLE REL = 18.3929

LANC + OHIPS YSAMPLE CALCE = 17.646 Ceg => Yell (144) = 50.5

CANCACITIPS (5) = 16,8837

enverenos+samous mes = 17,40734 => Yieldemes = 68.6

SAMPLE 121 = 1.50929

707.76 YIECA = (0.5051×0.6869)×100 = 34.69 %.

Commuts:

All samples were hard at temperature after cure at 1148 E.

Ave Y=elduy) = 50.12, 0=0.78, 1=3

Ave Y:eld (nece) = (68.7% 5=1115, 1=3)

Ave Mc QMCC 7 34.41- = 0.26, n=3

Performed and Recorded by:

Directed by:

Read and Understood by:

Date: Date A Th

Date /

# Subject VI + Core to VLOU'S of 195-129-52#4-1 w/195-129-53 Cross-Reference (if any)

Purpose:

To desity ele composito was phosphocresin Furtural blands To verity nex vollo gritup w/p. tehes in the PSC.

Materials:

1) ele composite: 195-129-52 44-1 (ele composité via BP process. Fran 45 Block in the 150 Lawrence burg Trial. 0.25" long pitch fibos + Reilley 155 Pitch. Load ration 85/15+5wt6 sulfur based on the pitch wt.) when = 1138-845, value = 748.383cc, Denos = 115225/ec

2) Inpregnent: 195-129-53 Loolso by volume GD-5432 terrforal. Prep. 5/14015/01. Vis (2) = (7.4) ch at 74. I'F, S.G. (3) 7 1. 188) at 74.5'F

Apparatus:

Ref. 195-120-15

Proceedine:

Ref. 195-120-15+16

Pump. Lown Data: (5/14-16/01)

DATE	TIME	(milary)	Comments
5/14	13:30	15	road c/c composite from over (ie. ~150°C, Atm. Prossure).
11	13:40	ч	·
И	16:05	16	
5/15	7:20	14	
и	16:00	16	
5/16	7:25	B	
и	8:05	15	charge traps wil dryice-acetere
1	8:50	10	LDR
in	11:45	10	Begin VI

Impregnation Data: (5/14117/01) - LOR exteraps charged LOR: Initial = 10 millitary Visitis = 17.4 c/s at 74.5°F

5601 (1.188) a+ 74.50 JMM = 21

10m. n = 17

10min = 34

Drg Time = 11:45 (10 wtorr) Unload Trave = 8:45 (5/17/01)

Held at atmospheric pressure for

~ 1 WE.

Commits :

570 ml of impregnant in the soonl cylinderel timel.

contidux+ page

Performed and Recorded by:

Directed by:

ed (lew Read and Understood by: Date -

Date

(c/c oxhPBI

Post Ingreguation Data! (5/17/01)

WECOVI-1) = 1320.11g → w+ fickup = 181.27g → w+10 Pickup = 1572/, Vollo Pickup (20.40)
Al Pan + Sereco (x) = 181.4g

Curing Data: (5/17/01) - Cure en small Al Pan wlan sisseres to determine vancont ef run-out.

	TIME	SET	TEMA?	Cansuit)
.ع <b>اد</b>	8:45		l .	Lord into once. Purge wlarger at J.O SCF11 (AIR)
	4:15	u	1	Web reach on all visible surfaces. Condensation on one closes.
	9,30	ler		Impregnment boiling an surfaces. Runout on screen a in the pour
	10:05	H		Builing has coased. Resin is likely cored.
-(2)	10:45	វេ		Unicad to desicator. Set evena + "82" (50%). Good ele camporte surish.
	-	-		Wt = 1232.35g => W+ Pickep = 93,5 k => will fickep = 8,21) (Yd = 5/16/1).
	-	-	~	Pan+Screen+Runout = 188.44 => Cured Run-out = 7.00
*	11:55	82		Lead over (180° Rotation 4 to bottom).
- (a)	13:55	14	248	Power off. Allew over to cool to ~150°C= un local to desicco for
	15:25	OFF		Unlowed to desicentat. Gol overnight Dweigh Following mersing

Post Curry pata: (5/18/01)

Pan + Screen + Cored Run-6 Wt (p) = 188. 3 => Cored Run-6 Ut = 6.90,

WEET = 1212.74 => We fickup = 73.94 => Wello Fickup = 6.49) (4d = 40.8%)

Impregnant Yield (including the run-out) = 44.6%) => Derity = 1.620 glee

Label 1995-129-56, Give to P. Sinocky 5/21/01

Rebute Pata: Ref. 145-129-76

Performed and Recorded by:

Directed by: 1 Clum

Read and Understood by:

Date

Date

Material:

195-129-56: c/c Composite via BP process from the 4th Block in the 1th Lnumerceburg trial. 0.25" leng pitch fiber + Reilley 155 Pitch. Land Ration 85/15+5 wt/o solfer based on pitch wt. Initial Pata: Ref. 195-129-52 #4-1. VI + Cure Data: Ref. 195-129-55456.

Recrick from P. Sirocky 6/20/01.

Reballe Cycle (per P. s. nocky):

10°C/hr to 900°C, 2hr hold. Block was wern when received. Cooled in desiceator = weighted + dimensioned.

Rebake Data: (6/20/01)

(3) L, L2 L3 (EN. W. W2 W3 WIDTH H, H2 H3 Ht. CCC)
1/29,43 192,10 192,32 192,37 192,26 83.98 83.62 82 86 83.49 46.51 46.62 46.60 46.79 747,836

Rebuke Ders. by = 1.577 g/cc =  $\Delta = 0.055$  g/cc over "green" dersity. We/c (green throuberke) = 3.76% (essentrally no charge)

Vol/o (green throuberke) = -0.07% (essentrally no charge)

Delo (green throuberke) = 3.61%.

We/o (cure throuberke) = -2.75%.

Leturel to f. strocky 6/20/01. Duta communicated vie e-muil to D. Hoong, P. Sirocky, LE. Pancost.

Comments:

# Impregrant % We Yield From VI thou Rebule = (40.59/181.27) × 100 = 22.4%.

. Mod MCC = 34.4 (t=0.26, n=3) For the impregnant => The clifference is due to run-out and for weight loss from the pitch binder because it haden't been to v900 & yet.

Performed and Recorded by:

Directed by:

Read and Understood by:

Date Date

## Subject Initial Data of ele Composites via DP Process (3ty Trial) Cross-Reference (if any)

(cle come

Purpuri:

To obtain initial weights and dimensions prier to vacuum impregnation with silizon (III) oxide colloidal dispersion for instruction to sic.

Materials:

ale comparity via BP process. Record Fran P. Strocky 7/16/01, Two bricks sections in - half. From the 3th howeverburg trial. Muche colo. 25 1 long k-2235E poitch Fibers and Reilley 155 pitch. Load Rution 75/25 w/o solfw.

Procedure:

Oftravaria washed in deconted 4,0 3x, Sministorals. > Vacuum elie Don at ~166°C, O. Imm pressure. Air cooled, will not fit in desiceator, = weighed + dimusioned.

In. tial Data: (7/19/01)

File Path = c1/ Program Files | Excel | BP E-C Composites | In. E.al, XLS Sheet = BP III

#### BP C/C COMPOSITES INITIAL WEIGHTS AND DIMENSIONS

Material:

Material: BP-III-1 and BP-III-2. Rec'vd 7/16/01. Ultrasonic washed 3x for 5 min. in deionized water on 7/18/01. Dimensions were obtained with a Starrett No. 123-12 vernier caliper. Hot vacuum dried at 166 °C to 0.1 mm pressure from 7/18 to 7/19/01. Weights obtained on Mettler PN 2210 balance on 7/19/01.

						Ave.				Ave.				Ave.	.,,	
i	Gample	Weight	Ll	L2	F3	Length	W1	N2	173	Width	B1	H2	H3	Height	Vol.	Den.
- 1	I.D.	(g)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(cc)	(q/cc)
.	3-1-A	916.19	8.173	8.155	8.110	8.146	3.251	3.305	3.304	3.290	1.333	1.302	1.288	1.308	574.297	1.595
	3-1-B	823.65	8.196	8.200	8.197	8.198	3.296	3.271	3.248	3.272	1.253	1.273	1.259	1.262	554.502	1.485
-	AVERAGE	=		, .					· .						ī	1,540
	STND. I	EV. =	-		,					-1	•					0.0777

					Ave.				Ave.	1			λve.		
Sample	Weight	L1	L2	L3	Length	Wl	W2	W3	Width	B1 .	H2	H3	Height	Vcl.	Den.
I.D.	(g)	(in.)	(in.)	(is.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(cc)	(q/cc)
3-2-A	867.13	8.883	8.863	8.837	9.861	3.226	3.265	3.298	3.263	1.183	1.170	1.169	1.174	556.247	1.559
3-2-B	861.58	B.913	8.905	8.896	8.905	3.263	3.281	3.292	3.279	1.196	1.207	1.180	1.194	571.400	1.508
AVERAGE															1.533
STMD. 'I	EV.														0.0361

Dimensioned: 07/19/01 Hot Vac. Dried: 07/18-19/01 Weighed: 07/19/01 N.B. Ref. No. : 195-129-86

#	Impregn	an t				NB Reference
3-1-A			Collei Dal D.	is gers,	کمر	195-129-88-89
3-1-3	14	n	Colleidal Di	N		195-129-92+93
3-2-14		н	M		JUJs	195-129-94295
3-2-13		~	24			195-128-960-87

Performed and Recorded by

Directed by:

Read and Understood by:

Date:

Date:

Subject VI of 195-129-86 #3-1-A w/5:1:con (III) Oxide Colloide / Dispusion (c/c con Cross-Reference (if any)

Purpose:

To investigate insitu conversion of carbon to SiC in a c/c composite

Materials:

1) c/c Composite: 195-129-86 #3-1-A: (c/c composite via BP process from the 15 Blo of the 3th Lawrence burg trial. 0.25 "long K-2235E pitch Fibers and Reidley 155 pitch Fibers and Reidley 15

Apparatus :

Ref. 195-120-15

Procedure:

Ref. 195-120-15+16

Use tetian support and Pyrex pan for drying.

Pump. lown Data: (7/20-23/01)

رم	4TE	TIME	PRESS (MTOST)	Connects
7	120	12:45	18	roud c/c composite from cold, dry over.
	и	13:00	W	Begin pump- down.
	И	14:00	44	,
	И	15:05	28	
7	/23	7:20	21	
	n	8:00	ч	Charge traps culdryice-acetore.
	и	9:05	14	LOR
	ь	11:50	13	Begle VI

Impregnation Data: (7/23+24/01) - LDR w(trops charged)

LDR: Initial = 14 nTorr Viscos (7/2 kps at 82.1 F Drop Time = 11:50 (13m)

5min = 27 " 5.6.(5) = 1.216 at 82.1 °F Unload Time = 8:00 (7/24

10min = 38 " Held at atmospheric press

15min = 49 " For 20/4 hrs.

Comments:

500 es cylindrical formel is full. Return impregnant to @ lat. poly-bot

Post Impregnation Data i (7/24/01)

Wt(pvI-1) = 1029.86g = Well-Eleup = 1/3.67g = wtlalizkup=12.41 Vo(lolizkup=16.

Performed and Recorded by:

Directed by:

Date

Read and Understood by:

# Subject VI of 197-129-86 #3-1-A wisil.con(III)on: Le Collocda | Dignosion (c/c compap) 89 Cross-Reference (if any)

Drying Data: (7/24025/01) - everset "29" (50%). Argurgurge 5.0 SEFH (4: R)

1	i	even 1	PRESS	
	TIME	TEMP	(mm)	Comments
	8:10	. 1		Loud over; "to top. Overset "29" (SDis), Purge wlarger at 5:0 SCFA (AIR)
(3)	11110	106		Unload over. Setover at "38" (50%), Weigh brick hot Co. doesn't Fit in decicular
	~	-		WE=989.00g = W=. fickup=72.81g = we/o fickup=7.95 (yd=64.1%)
*	นะ3ง	125		Loudover; #tobetton. Over set at "38" (50%). Purge wlarger cet J-OSCFH (AR)
(2)	13:30	130		Usland over Letoverat "46" (Stir) Weigh brick het. Install new gus ketilag.
	. ,	1		Wt= 954.41g => Wt. Pickup = 38.22g = Wt/6 Pickup = 4,17 (YW=33,6%)
#				Lundover; # to top. Presst "46 WON). Vec. gump on Argan gurge aff. Reducepressure.
		. 1		Vac. pump of I. Bressorize wargon. Seto ver at 29" (50) Leave clos open to cool.
_				WE = 952 16g = Wx Pickup = 36.0 7g = W+10 Pickup £3.94) (40 = 31.7%)

comments!

- 1) After 3 los, NIO7°, atm. pressure; No evidence of run-sut. Let over a 4"38" (50%). Retate brick 180" (# to be them).
- 2) After alor, "128's, cet n pressure;
  No evidence of run-out. Set over ut "46" (50%). Rotate brick 180° (# to top). Remove old door gasketing and replace when gasketing
- 31 After 17hrs, ~ 175°C, vacuum's

  Note: by 15:30 (7/24/01) the over temperature we, ~100°C and the pressure

  was 0.81mm = sample direct quietly.

  No evidence of run-out. Set over to "29" (50') and leave door open to cool.

Comments:

The percent weight yield of the impregnant, insitu, agreen withint of the solution in chucibles. Ref. 195-129-90.

Label 191-129-89

Performed and Recorded by:

Directed by:

y: I (Cari

Read and Understood by:

Date - /

Date

Subject project of silican (IF) existe 30% in the collected of Silican (IF) existe 30% in the collected of Silican (IF) existence (If any)

Purpose:

To determine the percent yield by weight of solution to compare while percent weight yield of VIel c/c composites.

Matoral:

silicen (IX) uxide, 30% in H,0, colloidal dispersion (AlFa-Aesa-), Lo+ AO4KO9, o.o. un particles, in liquid. SA = 320 m²/g. Deniilg = 1.20.

Visus = 7.7 cps at 82.1°F, Spec. Grav. si = 1.216 u + 82.1°F.

Apparatus:

@ 100 ml parcelain. Al feil covers,

Procedure:

Weigh wing into each crucible, containing sic beating chips. Gover with foil Punch holes in Al foil and obtain total weight. Subtract sample weight to obtain TACE. Processed w/195-129-89.

Initial Duty: (7/24/01)

```
1) CAUCHERS+SAMPLE (3) = 59.4975 (4) CRUC(etc)+A1 Foil (3) = 60.1600

CAUCHERS (3) = 49.3229 CAUCHER) (3) = 57.4975

SAMPLE (3) = 10.17469 A1 Foil (4) = 0.6625g => TARE = 49.4854
```

a) case terms + rample er = 
$$54.7967(4)$$
 case (etc.) + A1 Foil ex =  $55.4580$   
case + entrs ex =  $44.7620$  case (etc.) es =  $54.7967$   
 $54.0006(1) = 10.0347g$  A1 Foil ex =  $0.6613$   $\Rightarrow$  TARE =  $45.433$ 2

Drying Data: (7/24+25/01) - Processed W/195-129-89

	TIME	OVEN TEMIO	PRESJ (mm)	Cannests
	8:10			Load in over; in front of Pyrex tray W/145-129-89. Purge w/wgor at 5.6 1674 (448)
- (3)	11:10	106		Unland, Cool in desicator = weigh. Satornat "38" (50%).
	-	- [		(#1) Cruc (etc) Wt=54.7662q > Wt=4,7808q > W6 Y:0/d = 46.99%
	-			#2 Cruclesh) WE = 49,9430g = WE = 4,5,87g = WE Y, eld = 45.04%
*	11:30			Reload; switch sides. Over set "38" (50%). Progenlarger at 5-0 scribblik)
- (2)	13:30	130		Unload. Cool in dericcutor & weigh. Let over at "46" (50%).
	-	-		#Concluse wt= 53,27219 > Wt= J. 28679 > Wt Y-eld= 32.30%
		<u> </u>		\$2) Cource (etc) W== 48.6710 => W6=3.1477 => W6 Yield= 32.36%
				sout I next page

Performed and Recorded by:

Directed by:

Read and Understood by:

Date

Date

Subject paying of ~103 samples of Silver (II) Oxide, 30% in 4,0, collected dispession (cle company) Cross-Reference (if any)

Drying Duta (care Q): (7/24+25/01)

* 14:20 126 (1) 736.6 Reland; reverse sides. One set "40" OTA. Vac. pump an. Argunguest.  175 0.4 Vac. gump of F. Pressurite wlongen. Unload, coul in desicator. > Weigh.  Of Gueletel We = 53.2182a = We = 3.2328a = Welyteld = 31.77%		Time	TEMP	PRESS (mm)	Connuts	
Gucletel WE = 53,2182g = WE = 3,2328g = WEYTER = 31,77%	失	14:20	126 (17)	736.6	Reload; reverse sides. One set "40" COTIL. Vac. pump an. Argen purpo eff.	
Gucletel WE = 53,2182g = WE = 3,2328g = WEYTER = 31,77%	- () 7)					
1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		-		-	(1) Guclete) Wt = 53.2182g => Wt = 3.2328g => Wt/re/Q = 31.77%	
Walcoveleta) 49 = 48.612 tg = WE = 3.1849 g = Wet x. relo = 31. +8/	_			_	(D) (melete) Wt = 48.6127g = Wt = 3.1894g = Wt Y. reld = 31.78%	ĺ

Ave 2 We Viel & 31.8 ) 5 (0.01, 1=2)

Comments:

Almost exactly the same value for each sample. Same percent weight yield as the insite 1. wt. yield for 195-129-89.

Performed and Recorded by:

Directed by:

Read and Understood by:

Date

Date

Subject vI f 195-129-86 #3-1-B w/5:1:con (III) oxide, Colladal Dispersion (c/c Con Cross-Reference (if any)

Pupote: P.J. 195-129-88

#### Muturale:

- 1) c/c Camposite: 195-129-86#3-1-B; (c/c camposite via BP process from the 12 8)00 of the 3rd howeverebuy trial. 0.25" long K-223-5E pitch fiber and Reilley 155, Landratio 75/25. No sulfur Wt 121-823.65q, Volum 554.50200, Decen=10485q1
- 1) Impregnet: silicon (III) oxide, 30% in H20, colloidal dispusion. (Alfa-Aesar), Lot#404K09
  0.01 un porticles, in liquid. SA = 320 m²/g. Versity: 1.20. Previous use: 195-129-8
  Vi3 cz = 7.7 cps at 8211°F, 5.6.cz = 1.216 at 82.1°F.

Apparateur: Ref. 195-120-15 Procedore: Ref. 195-129-88

Pump- Lewn Data!

	DATE	TIME	PRESS (MTOIL)	Commun +3
	7/23	13 1 15	21	Load block from hot over (NICC, Atm)
	vt	13:25	ut	Begin pump-Down
	n	14:25		,
	7/24	7:10	24	
	u	8:35	23	enurge traps wldryice-acctore
	и	8:15		LDR
1	и	11:41	13	Beglo VF

soonly lindrical formel Filled (ie-v675ml)

Post Impregnection Data: (7/25/01)

Performed and Recorded by:

Date

Performed and Recorded by:

Directed by:

Read and Understood by:

Date Date Subject VI of 125-128-86 #3-1-B w/silven (FE) oxide, Collected Dispusion (c/c compap)93 Cross-Reference (if any)

Drying Data: (7/25+26/01) - over cet "29" (50%). Page who you at 5.0 scFH(4cR)

ı		OVEN;	PRESS	
	TIME	TEMP	(mm)	Comments
· *	8:00	107	Atm	Loudover. # to top. Over set 25 (500). Argon purge sits Et A (AR)
<b>(3)</b>	1)100	108	U	Unlaudever Over set "38 Loval. Weigh black hot.
		_		W+ 907,62a > Wt. Pickup = B3,7 tg > W+/or/ckup -10,17 C70 00.000
*	11:30	139	Atm	Loudover, to bottom. Over set "38" (500), Argon garge Sold CHA (AIR)
-(2)	13:20	132	u	milead over Overset 46 (50%). Weigh block hot. Install new gashering.
	-	_	-	WE = 871, 76 = 7 We Pickup = 48.11 = WE10 Pickup = 3.87 C/a = 37.011
*	13:YÜ	1366	736,9	Load over; It to top. Overset "46 001), Var. jump on. High forge of.
	7,4%	16.6	24	War and of Presidite Wager. Set over at 25 (30%)
				WH= 863 89, \$ WE Pickup = 40. 24g \$ WELD Pickup = (4.89) (40 = 31.6%)

## commuto:

- 1) After 3 hrs, ~108°C, atm. pressure; Rotate brick 180° (# to bottom). Set over 4+ "38" (50%). No evidence of non-art Similar % Let Yrel D to 195-129-89 (ie. 64.1%).
- 2) After 2 hrs, ~131°C, atm pressure; Scrape off old gasketing and install new, set over to "46" (500). Rotate brick 180° (# to top), No evidence of run-out. Hac condensed on over door; wiped dry.
- 3) AFter 18 hrs, ~168°C, vacvom; No evidence of Nun-out. Over set to "29" (50%), Leave Door open to cool.

Label 195-129-93 Graph Data: Ref. 195-130-63

Performed and Recorded by:
Directed by:

Read and Understood by:

Date , , . . . Date

Subject 15 195-129-86 \$3-2-A w/ silver (19) oxide, colloidal dispositor (c/c con Cross-Reference (if any)

Purpose:

Nef. 195-129-88

Materials:

Dele composite 197-125-86 #3-2-4 Lele composite via BP process. From block #2 of the 2" Lawrenceburg trial. 0.25" long K-22355 pitch Fibers. Reilley 155 pitch. cood Rutio = 75/2 who solfur. Ween = 867.13g, Volum = 556.247cc, Dences = 1.557g/cc

a) Impregnant! Silver (II) oxide, 30% in H2O, colloidal dispersion. (Alta-Aesar), Lot # AOY
0.01 um proticles, in liquid. SA=320m2/g. Density = 1.20, Pressour use: 7/25/81.
Vision: 7+7 cps at 82.1°7, 56 us: 1.216 at 82.1°1.

Apparatos:

R.F. 195-120-15

Proceedure:

Ed. 195-120-15+ 16 \* Processed w/ 195-129-86 #3-2-3

Panja Down Duta: (7/2425/01)

Ī.	VA TE	Time	MESS, (mm)	Connects
-	7/24	13/20	19	Load from oper lab
	и	13.31	ч	Begin pump-lawn
	и	14:37	340	"High" pressure => brink picked up moisture in lab
į	u	157.55	~205	ų į
	7/25	7:20	37	
	и	8:35	33(4)	Charge traps wildry/co-acotone
1 F	и	9:30		LDR
L	и	11:45	18	Degin VI

Impregnation Data! (7/20+26/01) - LDR-00/traps charged.

LDR: Enitial = 22 m Torr View = 7.4 mps at 78.0°F Drap Time = 11:45 (16 m To

Imia = 46 " S.G. 12. = 1.220'at 78.0°F Unload Time = 8:15 (7/26/c

10 mia = 60 " Held at utmuspheric pressure

15 mia = 74 " For ~ 20/2 Ws,

Commuto: Filled sooml cydindbireal fune!

Post-Impregnation Data: (7/26/01)

Performed and Recorded by:

Date

Directed by:

Read and Understood by:

Date

Date

Date

Subject 12 VI of 195-124-86#3-2-A colsilised Colored Colored Collected Chapes in (ck. compre) 95 Cross-Reference (if any)

Daying Data: (7/26+27/01) - Overset "29" (50%). Purge Wargen at 5.0 SEFHLAIR)

1		OVEN	PRESS	
	TIME	TEMP	(mu)	Comments
, *	g:30	106	Atm	Loud over; # to top. over set "19" (501,). Asgon purge at 5.0 SCEH(AIR)
- (J)	11:30	120	u	unloudover over set "38" (DOX). Weigh block hot.
	-	-	-	Wt=944.48g = W+ Pickup=77.35g → WE/O Pickup=8.92 (Yd=64.3%).
71:	11:45	150	Atm	Loudever; # to bottom, first of truy. Over vet "36 Cook. Argon purpe ICSCFH
,	13:45		N	Unhadaver. Over set "46" (50'r.). Weigh block hot. Install new gasketing.
			-	we = 906.75g → w+ Pickup = 39.62g = w+10 Pickup = 4,57 (Ya = 33.0%).
*	14:30	176	742.0	bullover, # to top buck of tray. Vac. pump or. Arger purge off. Reduce pressure.
- (18)	8:30	166	0,3	Vac. pump off. Pressurize wlarger. Set over at "29" (50%)
	_	_	-	WE= 905.02 => W+ 8:2KUP = 37.89 => W+/o P. Elcop = 4.37 (Xe=31.5%)

#### Comments:

- 1) After 3 hrs, ~113 c, atm. pressure;
  No evidence of run-out. Set even at "38" (50%). Weigh block hot. Rotate 180;
  # to bottom. Reverse position w/ 195-129-66 #3-2-B (ie. Frent of Pyrex tray).
- 2) After 2 hrs, ~ 148°C, atm gressire;
  No evidence of tun-out. Let over at "46" (50%). Weigh block hot. Rotate 180°; # to
  top. Reverse position will "B" (ie. rew of Pyrex trey). Remove old quiketing
  and install new.
- 3) After 18 hrs, ~171°C, vacuum's

  Set over at "29" (50"). Weigh black het = relead wil "B" companion into

  VI unit for 2" impregnation

is yield of the impregnant agrees wiprevious blocks; 31.7%, 31.6%, and 31.5%.

Label 195-129-95 3-2-A 2 VI! Ref. 195-129-99+100

Performed and Recorded by:

Directed by: ((iiii) Read and Understood by:

ded by

Date Date

Subject VI of 145-128-66#3-2-13 wishen (III) oxide, collected dispersion (cle corps. Cross-Reference (if any)

Purpose: Rof. 195-129-88

muterials!

11 c/c composite 195-129-86 #3-2-8 (c/c composite via BP process. From 6/ock #2 of the 3th Lawrence bury trial, 0.25" long K-223 SE pitch Fibers. Reilley 154 pitch. Load ratio = 75/2 who solfer with - 861,569, Velex - 571,400cc Decen - 1.5069/cc Alimpregnant: Silicon (III) oxide, 30% in Hat, colloided dispersion. (Alfa-Aesar) Lot "Aut ordunparticles, in liquid. SA=320 m2/q. Deverty = 1,20, Previous use: 7/26/01. Visiti - 7.7 cps at 82.1 F, S.G. (4) - 1.216 at 82.1 F

Apperator:

12f. 195-128-15

Procedime:

Red 195-120-15016 Processed w/195-129-66 # 3-2-A

Pung-down Duta: (7/24025/01)

			PILES	
15	ATC	TIME	CM TOST	Commects
7	124	13,20	19	Loud from open lub al #3-2-A
	u)	13:35	,	Begin pump-lawn.
	u	14:31	390	"High grewore = blocks picked up moisture in lab.
	LI .	15:55	"dos"	
7	125	7:20	17-41	
	r <u>?</u>	8:31	33(N	Charge trap slityice - acctors
<u>.</u>	L#	7:10	22	LDR
; 	ii l	11:45	18	Begin YI

Impregnation Data: (7/25+26/01) - LDR witempe charged Visces F 7.4 Gps at 78.00= LAR: Initial = 22 mters Drop Time = 11:45 (18 mTest) 36 cm = (1.226) at 78.075 Jmin = 46 Unlocalitime = 8:15 (7/26/01 lemin = 60

DMIN = 74

Consucts. Filled soonl cylindrical friend (ie vozsme).

Pest Impregnation Data: (7/26/01)

Performed and Recorded by: 133.81g = well-fickup (15.53) Nollo Fickup (19.20)

Date: Directed by: Date Read and Understood by: Date

Subject VI of 195-129-86 # 3-2-B . Uls 1. En (III) exicli, colloidal dipersion (che compa)? Cross-Reference (if any)

Drying Onta: (7/26+27/01) - over set "29"(50%). Argen prige 5.0 scFH (AIR). Govers W/195/129-95

	TIME	enen Temi	erecs (non)	Connerts
	g:30		Atm	Loud over; to top. over set "29" word, Argos purgea +5.05CFH(AIR).
	11.730		u	Unload over. Set over "38" (sors. Weigh black hot.
	_		_	WE = 950,91g => W& PIEKUP = 89.33g => W&/o Pickup = 10.37 (Yd=66,8%)
*	11:45			LOND Over, # to bottom, back of tray. Over cat "35" (50%). Argon purper 5.05. Art.
(2)	13:45	138	и	viloadown set over "YE" (soid, weigh block hot. Instell new gasketing.
	_	-	_	Wt=906.48g => W+ Pickup=44,90y => W=10 Pickup=5,21 (yd=33,61/1)
*	14:30	176	742.0	Loadover; * to top, frest oftray. Overset "46" (50%). Vac. pump en. Aryon purge off.
	8130	166	0.3	Vac. pump off. Pressurize wlarger. Set ever "29" (50%).
				Wt = 703,58 = 2 wt P. tup = 42,01, = unto P. tup = 4.88 (Yd = 31.4).)

#### Consuts:

- 1) After 3Ws, vil3 c, atm pressure; No evidence of sun-out. Set own at "38" (50%). Weigh block hot. Rotate 180", # to better. Reverse position in Pyrex tray w/195-129-86#3-2-A. (ie. back of tray).
- 2) After 2 hrs, ~ 144°c, atm pressure; No evilence of run-out. set over at "46" (5011). Weigh bleck hot. Rotate 180; "to top. Reverse position in Pyrex tray (ie. Front of tray). Renew old door gasketing and install new.
- 3) After 18 Ws, ~171 E, vaccom; Set over "29" (50%). Weigh block hot => release wilgs-129-95#3-2-4 into VI unit For 24d impregnation.

Commets: 7. g. x ld of impregnent agrees w/ previous 3 blocks; 31.7%, 31.6/4, and 31.5%.

Label 195-129-97 \$3-2-8 20 VI: R.F. 195-130-0/202

Performed and Recorded by

Directed by:

Read and Understood by:

Date Date

Subject Initial Date of Graph lized ele Conjustes Via Br Process (4th Trial) (ck Cross-Reference (if any)

### Purpare:

To obtain the initial weights and dimensions prior to vaccion improgration with "T-143" type phenolic/furtural resin blend for dess. Fication.

#### Muturals;

cle composites via Bi process. Recve Fran P. Strocky 7/25/01. Two sections, both graphitized. Section A-1" had one pitch impregnation, section "B-1" diffrat have a P.I. Both graphitized to "3000'c

Made with 2235 = 0.25 "long fibers on it Reilley 155 pitch. Loud Ratio = 75/2 wio solfur. Brick 13 of 4th trial,

## Procedute:

Essentially same as 195-129-86. Except cooled in Desiccatur

Initial Data! (7/47/01)

Eile Path = Cil Brogram Files | 5xcel | BP accompasites | In. tral. XLS Sheet = BP II

#### BP C/C COMPOSITES INITIAL WEIGHTS AND DIMENSIONS

#### Material:

Material: BP-IV-13 A1 and BP-IV-13 B1. Rec'vd 7/25/01. Ultrasonic washed 3x for 5 min. in deionized water on 7/26/01. Dimensions were obtained with a Mitutoyo Model CD-8'CS digital caliper. Hot vacuum dried at 124 °C to 0.4 mm pressure from 7/26 to 7/27/01. Weights obtained on Mettler PN 2210 balance on 7/27/01.

Note: Both samples have been graphitized to ~3000°C. Al has one PI. B1 has no PI.

					Ave.				Ave.	1			Ave.		
Sample	Weight	Ll	L2	L3	Length	W1	W2	₩3	Width	H1	32	H3	Height	Vol.	Den.
I.D.	(g)	(max)	(mm)	(DEEL)	(1992)	(2320)	(mm)	(ppa)	(mm)	(2020)	(mm)	(100)	(mm)	(cc)	(g/cc)
4-13-A1	277.03	108.95	106.89	108.98	108.94	93.90	93.92	23.55	93.92	15.65	16.01	16.08	15.91	162.825	1,701
4-13-B1	255.92	107.20	106.19	105.13	106.17	96.81	97.06	97.50	97.12	16.48	16.15	15.66	16.10	165.987	1.542

Dimensioned: 07/27/01 Hot Vac. Dried: 07/26-27/01 Weighed: 07/27/01 N.B. Ref. No. : 195-129-98

# Impregnant
4-13 A1 195-129-53 Walso by valla GP5432/Fusturel)
4-13-131

NBRef. 195-130-03+04 195-130-05+66

Performed and Recorded by:

Directed by:

Read and Understood by:

Date Date Date